Male-Female Differences in Adult Patients Presenting to the Emergency Department with Fournier's Gangrene

College of Human Medicine
MICHIGAN STATE UNIVERSITY

Natalie Woodland (M-3), Matthew Singh MD, Jason Seamon DO, Mariah Barnes MD, Sean Farley MD, Christian Kolacki MD, Angela Zamarripa MD, Lindsey Ouellette MPH

Michigan State University College of Human Medicine, Department of Emergency Medicine; Corewell Health - Michigan State University Emergency Medicine Residency Program, Grand Rapids, MI

INTRODUCTION

- Fournier's gangrene (FG) is a rapidly progressive necrotizing fasciitis of the perineal, genital, or perianal regions predominantly seen in male patients.
- This condition is characterized by rapid progression and is associated with significant morbidity and mortality.
- Traditionally, FG has been viewed as a male-dominated condition; however, its presentation and outcomes in female patients are less well studied, leading to a gap in understanding the gender-specific implications of this life-threatening disease.
- Given the underrepresentation of female patients in existing FG literature, our retrospective cohort analysis aims to identify potential differences in clinical characteristics, treatment approaches, and mortality rates between male and female patients presenting to emergency departments with FG.

METHODS

- Retrospective cohort analysis of adult patients presenting to the EDs of eleven affiliated hospitals in West Michigan with a final diagnosis of FG.
- Spanning 19 counties in Michigan, affiliated institutions included four rural medical centers, three community hospitals, and four university-affiliated hospitals.
- Patient demographics, clinical characteristics, treatments, and outcomes were compared between males and females treated for FG from 2012 to 2022.
- Study hypothesis: "Female patients diagnosed with Fournier's gangrene exhibit distinct clinical characteristics and treatment outcomes compared to male patients, with specific differences in presentation, comorbidities, and mortality rates despite similar interventions."
- Categorical variables were compared between males and females using either a Chi-square test/Fisher's Exact test and continuous variables were compared with a 2-sample t-test.

RESULTS

- During the study period, 110 patients were treated for FG; 22 (20%) were female.
- Male and female patients were predominantly white (79% versus 82%), with a mean age of 53 ± 14.0 years.
- Females had a higher mean body mass index (BMI) than males (40.3 versus 36.5, p = 0.01).
- The most common clinical presentation was scrotal and labial pain, fever, abscesses, crepitus, edema, and cellulitis.
- Diagnosis was made from clinical findings in conjunction with imaging.
- Comorbidities, FG severity index, length of hospital stay, 30-day readmission rate, number of surgical debridements, and wound cultures were comparable in both groups (Table 1).

Table 1. Demographics (N=110)

Characteristic	Males	Females	*P*
Total Patients	88 (80%)	22 (20%)	
Mean Age	53.0 ± 13.3	53.1 ± 15.5	0.98
Race (White)	78.4%	82.0%	0.71
Insurance (Private)	27%	32%	0.64
Mean BMI	36.5	40.3	0.01
Common Symptoms	Scrotal pain, fever, abscesses, crepitus, edema, cellulitis	Labial pain, edema cellulitis, malaise, crepitus, abscess	
Comorbidities	3 (2-3)	3 (2-3)	0.65
FG Severity Index, median	6 (4-7)	6 (4-8)	0.33

- Polymicrobial infection occurred in 67.2% of patients (Table 2).
- Mortality rate (MR) during initial hospitalization was 9.1% in women compared to 8.0% in men (p = 0.82).
- The 30-day MR was 9.1% in women compared to 12.5% in men (p = 0.66). An increased FG severity index predicted an increased mortality rate or a prolonged hospital stay above the median (p = 0.022) in both genders.

Table 2. Outcomes

Characteristic	Males	Females	*P*
Gangrene Location	Scrotum, perineum, glutus, thigh	Labia, perineum, glutus, thigh	
Length Hospital Stay	11 (6-17)	12 (7-22)	0.29
30-Day Readmission Rate	30.7%	36.4%	0.61
Debridements, median	2 (1-3)	2 (2-3)	0.09
Procedures, median	3 (2-6)	4 (2-7)	0.03
Polymicrobial Infection	69.3%	59.1%	0.36
Hospital Mortality Rate	8.0%	9.1%	0.87
30-Day Mortality Rate	12.5%	9.1%	0.66

DISCUSSION

- Although the incidence of Fournier's gangrene (FG) in females remains lower than in males, with a noted male-to-female ratio of 4:1, our findings emphasize that FG is a significant and life-threatening condition for all patients regardless of gender.
- However, treatment outcomes at our affiliated institutions are comparable to those reported in recent literature, a significant decline from the historical mortality rate of 50–70%.
- Both male and female patients exhibited similar rates of polymicrobial infections, comorbidities, and severity of disease, highlighting the complexity and multifactorial nature of FG.
- An increased Fournier's gangrene severity index was predictive of heightened mortality risk and prolonged hospital stays across both genders.
- These figures underscore the severity of the condition and the need for prompt recognition and aggressive management in all affected patients.

CONCLUSIONS

- Moving forward, our study advocates for heightened awareness of the presentation of FG in female patients, who may present with atypical symptoms or delayed diagnoses compared to their male counterparts.
- Future research should focus on larger, multicentric studies that further explore these gender-specific differences to refine treatment protocols and enhance patient care.
- By acknowledging and investigating the nuances of Fournier's gangrene in females, we can contribute to the evolving understanding of this critical condition and improve overall health outcomes for all affected individuals.